

"case" and "casing" by reference character 12. Applicants have amended the disclosure to use the single term "case". Withdrawal of the objection is respectfully requested.

Claim 25 is rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter of the invention. Specifically, the Examiner states that "the filter system" in line 2 of claim 25 has insufficient antecedent basis. Applicants respectfully direct the Examiner's attention to claim 13, from which claim 25 depends. At claim 13, line 2, "a filter system" is positively recited. Withdrawal of the rejection is respectfully requested.

Claims 13-20 and 24-25 are rejected under 35 U.S.C. §103(a) as being unpatentable over Engstrom (U.S. Patent No. 3,468,425) in view of McBurney et al (U.S. Patent No. 2,955,067) Withdrawal of the rejection is respectfully requested.

Initially, applicants note that claim 24 has been cancelled and claim 13 amended to include an absorbent tissue paper material and inner winding turns. Support for the amendment is found in the disclosure at page 5, lines 9-14 and page 6, line 25 to page 7, line 4. Additionally, applicant has used the conventionally accepted term "tissue paper" for the term "cellulose cotton paper". That this is a corresponding term is illustrated in U.S. Patent No.

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6,106,928, column 1, line 12. A copy of the '928 patent is attached for the convenience of the Examiner. No new matter has been added.

The present invention is directed to a filter element for filtering a fluid in a filter system including a cylindrical case. The filter element includes an absorbent tissue paper material in sheet form compactly wound to constitute a tubular cylinder inside the cylindrical case in a manner to partition an outer radial part from an inner radial part. The filter element is devoid of a central core and includes inner winding turns having means which prevent the winding turns from unraveling inward. The construction of the filter element allows fluid to move across the filter element in a substantially centripetal direction.

Engstrom is directed to a cylindrical fluid filtering element composed of a hollow cylinder formed of fibrous filter media, such as paper, in web form. The filter media web is coiled on itself to provide enough convolutions which effect a radial thickness thereof adequate for depth-type filtration. The fluid filtering element is then impregnated with a resin and cured to provide rigidity to the element, both radially and longitudinally. Column 3, line 23-25.

Contrary to Engstrom, the present invention includes a filter element composed of tissue paper, e.g. toilet paper, as the basic filter element material.

Engstrom, on the other hand, teaches a filter element composed of a fibrous filter media such as paper. No mention is made of tissue paper anywhere in Engstrom. Rather, Engstrom generally teaches a fibrous filter media in web form. Further, the filter element of the present invention is rigid by itself and therefore does not require impregnation with a resin, as required by Engstrom. That is because the absorbent tissue paper material of the claimed invention is compactly wound to form inner winding turns. In addition, Engstrom fails to teach or suggest a filter element having inner winding turns having means which prevent the inner winding turns from unraveling inward. As illustrated in FIGURES 3-6 of Engstrom, the fluid filter element therein does not include the claimed inner winding turns. Compare to FIGURE 2 of the captioned application.

To make up for the shortcomings of Engstrom, the Examiner relies on McBurney et al. Specifically, the Examiner relies on McBurney et al to provide a filter element formed of an adsorbent paper material for filtering fluids, particularly lubricating oils. McBurney et al teaches a cellulosic paper containing an ion-exchange resin which adsorbs ions from fluids. However, McBurney et al does not make up for the shortcomings of Engstrom. For example, McBurney et al provides no description as to the form of a filter element made with such paper, in particular, McBurney et al does not teach or suggest a

filter element composed of tissue paper. Rather, McBurney et al teaches cellulosic paper made from paper-making stock having dispensed therein an ion-exchange resin. In addition, McBurney et al further fails to teach or suggest a filter element including inner winding turns presenting means preventing the inner winding turns from unraveling inward. As such, since Engstrom also fails to teach these elements, Engstrom and McBurney et al, alone or in combination, fail to teach or suggest each and every element of the claimed invention as required under §103.

Accordingly, withdrawal of the rejection is respectfully requested.

Claims 21-23 are rejected under 35 U.S.C §103(a) as being unpatentable over Engstrom and McBurney et al, as applied to claim 13 above, and further in view of White (U.S. Patent No. 4,469,598).

Applicants note that claims 21-23 are dependent directly or indirectly on claim 13. As stated above, Engstrom and McBurney et al fail to teach or suggest a filter element comprising an absorbent tissue paper wherein the filter element includes inner winding turns presenting means preventing the winding turns from unraveling inward. Since White et al is relied upon by the Examiner solely to teach a filter element being formed of an absorbent paper material comprising a series of sheets interlaced to provide a tubular cylinder, applicants respectfully submit that

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White fails to make up for the shortcomings of Engstrom and McBurney et al as set forth above. Thus, the cited references, alone or in combination, fail to teach or suggest each and every element of the claimed invention. Accordingly, withdrawal of the rejection is respectfully requested.

Reconsideration and allowance of the claims are respectfully urged.

Respectfully submitted,

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Attachments - Marked Up Version of Specification
- Marked Up Version of Claim
- PTO Form 1449 w/2 documents
- U.S. Patent No. 6,106,928

MARKED-UP VERSION OF SPECIFICATION

On page 5, at lines 9-14, rewrite the paragraph thereat as follows:

"The [casing] case 12 includes an intake 22 radially issuing into the side wall 16 so that a fluid may enter the inside of the case 12. The lower lid 18 is fitted at its center with an axially pointing orifice 24 constituting an outlet for the fluid after it has been filtered so that it can leave the case 12."

On page 5, line 23 to page 6, line 11, rewrite the paragraph thereat as follows:

"The illustrated filter element therefore can be manufactured in the manner disclosed in the French Patent Document [2,544,799 A] 2,554,799 A which is explicitly referred to herewith for all details relating to the manufacture of this filter element. In summary, however, this procedure involves winding the paper strip around a conical or cylindrical bar of which the cross-section is circular, polygonal or other, or at least the cross-sections of the bar exhibit edges which run approximately parallel to the winding axis or subtend a simple or complex helix around the axis, the paper being folded at these edges. A compression roller is applied against the outside of the winding in progress and allows especially compact winding,

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and, when this winding bar exhibits edges in its cross-section, the compression roller neatly folds the paper where it makes contact with the edges."

MARKED UP VERSION OF CLAIM

13. (Amended) A filter element for filtering a fluid in a filter system comprising a cylindrical case, said filter element comprising an absorbent tissue paper material in sheet form compactly wound to form inner winding turns therein and [configured] to constitute a tubular cylinder inside said cylindrical case in a manner to partition an outer radial part from an inner radial part, wherein fluid is able to move across the filter element in a substantially centripetal direction, [and] wherein the filter element is devoid of a central core, and wherein the inner winding turns presents means of preventing the inner winding turns from unraveling inward.